

Duane Arnold Energy Center

April 26, 2007

NG-07-0366 10 CFR 50.73

U.S. Nuclear Regulatory Commission Attn: Document Control Desk Washington, D.C. 20555-0001

Duane Arnold Energy Center Docket 50-331 License No. DPR-49

<u>Licensee Event Report #2007-004-00</u>

Please find attached the subject Licensee Event Report (LER) submitted in accordance with 10 CFR 50.73. This letter makes no new commitments or changes to any existing commitments.

Gary Van Middlesworth

Site Vice President, Duane Arnold Energy Center

FPL Energy Duane Arnold, LLC

CC:

Administrator, Region III, USNRC Project Manager, DAEC, USNRC Resident Inspector, DAEC, USNRC

IEDA

NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION						APPROVED BY OMB: NO. 3150-0104 EXPIRES: 06/30/2007									
LICENSEE EVENT REPORT (LER)							Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to Impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to the								
(See reverse for required number of digits/characters for each block)							may not conduct or sponsor, and a person is not required to respond to, the information collection.								
1. FACILITY NAME							2. DOCKET NUMBER 3. PAGE								
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LICENSEE EVENT REPORT (LER)

TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)		PAGE (3)		
Duane Arnold Energy Center	05000331	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
		2007	004	00	2 of 4

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

I. Description of Event:

On February 24, 2007, while the plant was shutdown and in Mode 5 for Refueling Outage 20, a severe winter storm brought freezing rain, ice and high winds to the DAEC grid area, causing degraded voltage conditions on essential busses. The DAEC was performing Core Alterations and the B SBDG was being manually run for post maintenance testing. The A Residual Heat Removal (RHR) Pump was operating in Shutdown Cooling mode. Time to boil was calculated as 36 hours and 48 minutes. Both Fuel Pool Cooling Pumps were in service providing cavity and fuel pool cooling, since the Fuel Pool Gates were removed and the reactor was flooded up. The A Control Building Chiller was inoperable and in day 1 of 30 per TS 3.7.5 Condition A.

The DAEC switchyard is supplied by six offsite circuits of which two are 345KV (Hazelton and Tiffin/Hills) and four are 161KV (Fairfax, 6th Street, Dysart/Vinton and Hiawatha). Due to severe weather conditions, the Hazelton line was lost at 1654, the Tiffin/Hills line was lost at 1714. At 1755, the A SBDG automatically started on bus undervoltage. The A SBDG did not load since the power remained available from the startup transformer. The B SBDG was already manually started for regulator tuning following governor replacement. Core Alterations were secured at 1756 based on indications that the grid was becoming unstable. At 1757 a full scram occurred due to loss of B RPS and Neutron Monitoring System Trip on the A RPS, and Groups 1 through 5 isolations (excluding the Main Stream Isolation Valves) occurred, resulting in a loss of Shutdown Cooling. At the time of the scram, all control rods were inserted in cells containing fuel, therefore, there was no rod movement.

At 1820, bus degraded voltage conditions caused both running SBDGs to load onto their respective essential busses. Fuel Pool Cooling, General Service Water (GSW) and B Control Building Chiller were lost due to load shedding. At 1825, grid voltage recovered, however subsequent conversations with the grid operator indicated that the area grid, including the DAEC switchyard, was isolated from most of the offsite power sources and only the 6th Street and Hiawatha 161KV lines remained powered into the DAEC switchyard. All work activities in the power block were suspended at 1835. The essential busses remained loaded to the SBDG.

Shutdown Cooling was restored to operation at 1826. GSW was restored to operation at 1844. At 1850, the B Control Building Chiller and Fuel Pool Cooling system operation commenced. The RPS scram signal was reset at 1912.

Grid repair and recovery allowed the essential bus 1A4 power supply to be transferred from the B SBDG to the Startup Transformer at 1148 on February 25, 2007. The essential bus 1A3 power supply was transferred from the A SBDG to the Startup Transformer at 0049 on February 26, 2007.

This event was reported to the NRC as an 8 hour event under 10 CFR 50.72(b)(3)(iv)(B), Any event or condition that results in valid actuation of: (1) Reactor protection system (RPS) including reactor scram and reactor trip, (2) General containment isolation signals affecting containment isolation valves in more than one system or multiple main steam isolation valves (MSIVs), and (8) emergency ac electrical power systems; 10CFR 50.72(b)(3)(v), Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to: (A) Shut down the reactor and maintain it in a safe shutdown condition, and (B) Remove residual heat.

NRC FORM 366A (1-2001) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

At the time of this event the plant was in day 1 of 30 of Technical Specification 3.7.5 Condition A Limiting Condition for Operation for one Control Building Chiller subsystem inoperable.

II. Assessment of Safety Consequences:

This report is being submitted pursuant to 10CFR50.73(a)(2)(iv)(A), 10CFR50.73(a)(2)(v)(A) and 10CFR50.73(a)(2)(v)(B).

In this event, disturbance of the offsite electrical grid resulted in automatic loading of the SBDGs and in temporary loss of Shutdown Cooling. However, significant margin existed throughout the event to the unacceptable consequence of uncovering spent fuel due to boiling of the water in which it is submerged.

A large volume of water covered the fuel in the reactor vessel and in the spent fuel pool, and the rate of decay heat production was relatively low since 21 days had elapsed since the reactor had been shutdown. Therefore, a long period of time would be required for this body of water to start to boil (estimated to be approximately one and one-half days) in the event that cooling systems failed to operate. Although the Shutdown Cooling system was out of service for approximately one-half hour, there was no noticeable change in reactor coolant temperature during this time.

Momentary loss of power to essential busses 1A3 and 1A4 caused both Shutdown Cooling and Spent Fuel Pool Cooling pumps to trip. Power was available to both systems however, upon connection of the SBDGs to their respective essential buses. Therefore, the water in both the reactor and spent fuel pool were maintained near their initial temperatures.

This event did not result in a Safety System Functional Failure.

III. Cause of Event:

An investigation was completed under Apparent Cause Evaluation (ACE) 1697. The cause of this event was a severe winter storm that brought snow, ice accumulation and high winds to the area. This storm caused extensive damage to the area including damage to the electrical grid.

IV. Corrective Actions:

There are no corrective actions related to the degraded voltage event because the causes, severe weather conditions, are outside the control of the DAEC.

V. Additional Information:

Previous Similar Occurrences:

LER 90-007 documents a loss of offsite power to the essential buses that occurred when the Standby Transformer was inadvertently de-energized. At the time of the event, the plant was in cold shutdown with essential power being supplied by the Standby Transformer due to the Startup Transformer being out of service for maintenance.

NRC FORM 366A (1-2001) U.S. NUCLEAR REGULATORY COMMISSION

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

The cause of this event was determined to be a personnel error by a non-nuclear utility system protection technician who failed to block trip signals during a breaker failure relay test. The task being performed was not covered by an approved procedure.

EIIS System and Component Codes:

DA – Fuel Pool Cooling and Purification System

EA - Medium-Voltage Power System (601V through 35kV)

EK - Emergency Onsite Power Supply System

FK - Switchyard System

JM – Containment Isolation Control System

VI - Control Building/Control Complex Environmental Control System

BO - RHR Shutdown cooling

JC - RPS

KG - GSW

Reporting Requirements:

This report is being submitted under 10CFR50.73(a)(2)(iv)(A), 10CFR50.73(a)(2)(v)(A) and 10CFR50.73(a)(2)(v)(B).